2003 Report on Success of Voluntary Mercury Reduction Program (VMRP) with Nevada Gold Mines
October 2004

The State of Nevada ranks as the largest gold producer in the nation and the third-largest in the world. In 2002, Nevada's gold mines turned out 7.73 million ounces of gold—80 percent of the total U.S. production—worth nearly $2.4 billion. That same year, the state's four largest gold mining companies (Barrick Goldstrike, Newmont, Jerritt Canyon, Cortez/Placer Dome) entered into an innovative partnership program with NDEP and EPA Region 9 to significantly reduce mercury air emissions, which are a byproduct of the production process.

The goals of the program are to:

- Achieve significant, permanent and rapid reductions in mercury air emissions from gold mining operations.
- Achieve reductions at reasonable costs.
- Achieve reductions through approaches that are most suitable for each individual mining facility.

The Voluntary Mercury Air Emission Reduction Program (VMRP), set emission reduction goals at 33% by 2003 and 50% by 2005. The companies achieved a 40% reduction by the end of 2002 and most recently, a **75%** reduction by the end of 2003. These are extraordinary reductions for a hazardous air pollutant in just two years. By using a voluntary partnership approach the mines installed emission control equipment and instituted pollution prevention process changes well in advance of what would have been required through a regulatory rule making process. The environmental results are especially significant, as these four mines were responsible for 90 percent of the mercury mining air emissions reported in the 1998 TRI.

Table 1 represents the baseline mercury air emissions prior to the modifications made for the voluntary program, emissions reported at the end of 2002, and the most recently reported emissions for 2003.

Table 1
Mercury Air Emissions
VMRP baseline emissions; and the Annual Reductions reported for 2002 and 2003.

	2001 Hg Air Emissions VMRP baseline	**Reported Hg Emissions in 2002**	**Reported Hg Emissions in 2003**	**Percentage Reduced from VMRP baseline emissions in 2003**
Barrick Goldstrike	7,768 lbs/year	5,920 lbs/yr	2,819 lbs/yr	64%
Jerritt Canyon/ Queenstake	7,980 lbs/year	4,738 lbs/yr	787 lbs/yr	90%
Newmont	1,045 lbs/year	1,032 lbs/year	381 lbs/yr	76%
Cortez/Placer Dome	4,305 lbs/year	1,053 lbs/year	1,409 lbs/yr	69%
Total Mercury Air Emissions	21,098 lbs/year	12,743 lbs/yr	5,396 lbs/yr	**75%**

* Note: 2001 Baseline mercury air emissions varies from TRI reported emissions due to more extensive mercury monitoring programs.

Table 2 describes the types of modifications made by the Nevada gold mines participating in the voluntary program. The mines had a choice to install MACT (Maximum Achievable Control Technology) equivalent controls (those technical changes that would be required if mercury were regulated under the Clean Air Act) or process modifications entailing pollution prevention or waste minimization techniques. The process modification controls track for reducing mercury has a goal of a 33% reduction by 2003 and 50% reduction by 2005.

Table 2
List of Controls put into place under the Voluntary Program
by Mining Company

Gold Mine	**Controls put in Place under Voluntary Program**
Barrick Goldstrike:	**MACT Equivalent Controls**: Carbon Hanlding and Refinery Operations; Sulfur impregnated carbon filtration scrubber units; deep bed filtration units;
Cortez/Placer Dome:	**Process Modification Controls**: Application of an organic sulfide solution to the heap leach is resulting in a reduction of mercury in process solutions and carbon circuits therefore reducing the mercury that reaches the refinery process.
Newmont: (Gold Quarry South Area Operations)	**MACT Equivalent Controls**: Scrubbers, condensers and carbon adsorption units added to Carbon handling and reinergy operations; Quenches, baghouses, scrubbers waste heat boilers, electrostatic percipitators, wash tower and gas coolers, and sulfuric acid recovery units added to the Ore Roaster Units.
Jerritt Canyon/Queenstake:	**MACT Equivalent Controls**: Water quenchers, wet scrubbers and carbon adsorption added to the Carbon regeneration kiln; A centralized scrubber system installed in refinery process (pregnant and barrent tanks and the mercury retort). **Process Modification Controls**: Sodium hypochlorite injection process in roaster gas handling system.